STATE OF CALIFORNIA
CONSUMER POWER AND CONSERVATION
FINANCING AUTHORITY

TO: Board of Directors
California Power Authority

FROM: Jeanne Clinton, Deputy Director Conservation and Distributed Generation

DATE: April 26, 2002

SUBJECT: **Possible Board Policy on Policy on Deployment of Real Time Metering**

Summary:

At the April 12, 2002 Board meeting during the public comment period, Mr. Chris King summarized a petition that his consortium has filed with the CPUC (summary attached). The Board directed staff to prepare a summary of the issues for the CPA and a potential policy statement that the Board might adopt and file with the CPUC on this issue.

Staff recommends that the Board:

- Adopt a supportive statement on expanded deployment of advanced metering for customers under 200 kW demand (residential and small non-residential users),
- Decline to take a position at this time on the universal deployment of such meters or the associated cost allocation for universal deployment, but encourage the CPUC to investigate the merits of this approach,
- Promote continued choice and creativity in the marketplace regarding value-added information services that non-utility parties might offer, and
- Send a policy statement to these effects to the CPUC.

Overview of Metering Petition Argument Filed for Consideration by the CPUC:

A consortium of meter vendors and meter service companies filed a petition in March with the CPUC requesting reconsideration of a previous decision (in 1997, associated with the electric sector restructuring, and anticipating customer choice of power provider) that had created competitive meter services in California. The petitioners argue that the market and technology have changed, and that there is now a rationale for returning "bundled metering services" to the distribution utilities under a monopoly arrangement. The argument essentially makes the claims that:

- Meter technology prices have dropped, making it more economically feasible to have universal deployment of "advanced" meters with hourly interval data capabilities. (Installed costs are now in the neighborhood of $100 for small consumers and $500 - $1,000 for medium or larger customer with demand over 50 kW)

- Universal (compulsory) deployment of the hardware has economies of scale (costing one-half or less), compared to the costs of competitive and voluntary deployment of one-at-a-time meter services.

- These meters, if deployed in conjunction with time of use (TOU) tariffs (typically 3 time intervals per day), and in the future potential real-time (hourly) pricing, have the potential to give both information and price signals to energy users that will reduce both energy consumption and peak power demands. The petitioners state that experience across the U.S. (in different programmatic configurations involving voluntary deployment, sometimes universal deployment, with and without extensive consumer billing/feedback information, and with and without time-of-use tariffs) indicates that residential and small business consumers might reduce their energy use by 2-9%, and peak demands by 5-20%. The exact impacts are heavily dependent on the particulars of how the technology is deployed, program is operated, and degree of information and marketing support offered by the local utility distribution companies. The power system benefits from these reductions could be substantial.

- As the cost of technologies via universal deployment fall, per month cost recovery allocations can be in the range of $1/meter/month for small users and no more than $15/month for larger users. These costs do not include any costs for marketing, informational, or customer support activities by the utility, nor for value-added reporting and advisory services of how customers could take advantage of voluntary TOU rates.

- The metering infrastructure can support future price-responsive and demand-responsive programs that could be offered to the smaller customers (e.g. with demands under 50 or 200 kW) who may not otherwise have access to such programs.

- "Fairness" dictates that the metering infrastructure be made available to small consumers, along with voluntary choices to select TOU tariffs.

- Utilities will experience operating cost savings from universal deployment, due to efficiencies in meter reading and increased billing accuracy.

- The petition's success depends in part upon cooperation of the CPUC to adopt widespread TOU tariffs, rate design for cost allocation, and in the future, potential real-time pricing tariffs. The success of the metering vision also depends in part on the manner in which distribution utilities support the hardware and data capability with enhanced customer information and education services.

Issues For Board Consideration

1. The Power Authority already supports accelerated deployment of advanced metering to customers not already having these meters, as witnessed by the CPA's own RFP inviting deployment of "real time" meters. That RFP anticipated voluntary deployment of such meters. Moreover, the system benefits from time-differentiated power pricing support the CPA's investment plan strategy for strategic reserves.

2. The petition raises the issue of voluntary versus mandatory (universal) deployment of the meters ("infrastructure hardware").

3. Under either voluntary or mandatory deployment, there must be a decision on the treatment of cost allocation. Historically, the CPUC has regulated the collection of time of use or other advanced meter costs through monthly tariffs for all customers having these meters (whether obtained on a mandatory or voluntary basis). The CPA's RFP for real time meters envisions that the customers choosing to have these meters will pay for them – directly or via bundled services received.

4. Most experts would advocate voluntary choice for small customers as to whether to go on a TOU or eventual real-time tariff.

5. On a conjectural basis, *if* the CPUC were to grant this petition, and *if* the utilities were to add expanded informational services to the meter service offerings, there could be some competition with the services called for in the CPA's RFP on advanced meters. That RFP envisioned complete turnkey offerings of voluntary real-time (advanced or interval) meter installations, together with information to make the consumers most informed about their energy price choices and how to best manage these costs. Alternatively, and again *assuming* that this petition were granted, several of the "real time" meter bidders to the CPA could end up as successful suppliers to the utilities. In such cases the Board would want to consider whether it wanted to still finance a now much larger scale meter deployment in conjunction with utilities.

6. So as not to preclude the near-term forward progress of advanced meter installation, the Power Authority would want to ensure that all programs and services that are substantially committed or underway, and/or offer expanded services beyond those envisioned by subsequent utility service offerings, have the ability to go forward now and in the future without prohibitions, as long as their metering and communication technologies are compatible with distribution utility systems.

Action Requested by the Board

Consideration of adopting the following Board policy statement on deployment of advanced customer metering, and communication of this position to the California Public Utilities Commission no later than April 29, 2002 (an extended deadline granted the CPA for filing comments on this petition).

The California Power Authority (CPA) supports any and all mechanisms to achieve expanded deployment of advanced metering for customers having less than 200 kW demand (residential and small non-residential users). We encourage the CPUC to investigate the merits and cost justifications that might warrant universal deployment of such meters, and if appropriate to determine a cost allocation for such deployment.

Moreover, the CPA finds it important to promote continued choice and creativity in the marketplace regarding value-added information services that utility and non-utility parties might offer to help customers manage their energy use and costs. Thus the Power Authority wants to ensure that all advanced metering programs and services that are substantially committed or underway, and/or offer expanded services beyond those envisioned by subsequent utility service offerings, have the ability to go forward now and in the future without prohibitions, as long as their metering and communication technologies are compatible with distribution utility systems.

Finally, the CPA acknowledges the importance of introducing expanded applications of time of use, real-time, and other forms of price- and demand-responsive mechanisms to elicit voluntary changes in energy use by customers -- not only for the direct benefit of the individual customer, but also when this can produce overall cost and resource efficiency for the State's power system. We encourage the CPUC to undertake this expansion, through voluntary mechanisms, at its earliest convenience.

Attachment: Summary of Petition to the CPUC and Basis for Energy Savings

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation.	Rulemaking 94-04-031 (Filed April 20, 1994)
Order Instituting Investigation on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation.	Investigation 94-04-032 (Filed April 20, 1994)

PETITION TO MODIFY D.97-05-039 BY THE CALIFORNIA CONSUMER EMPOWERMENT ALLIANCE ("CCEA") TO REVOKE COMPETITIVE METERING AND ORDER UDCs TO SUBMIT ADVANCED METER DEPLOYMENT PLANS

I. INTRODUCTION

Pursuant to Rule 47 of the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the CCEA[1] files this Petition for Modification of

[1] The California Consumer Empowerment Alliance consists of eMeter Corporation, ABB, Inc., Echelon Corporation, and Siemens Power Transmission & Distribution. Alliance membership is open to any entity supporting the Alliance's goals as set forth in this Petition. The Alliance recognizes that a decision in favor of this Petition would not in any way guarantee that the Alliance or any of its members would be favored

Decision (D.) 97-05-039, the Revenue Cycle Services Unbundling Decision ("Unbundling Decision").

Goals: the purpose is to empower consumers and reduce rates for all ratepayers. Empowerment results from providing more information to consumers and by giving them the ability to lower their bills by shifting energy off-peak, voluntarily. The major savings result from lower costs of peaking power by reducing demand at peak times (there are also utility operational savings). The mechanism is universal installation of hourly meters combined with voluntary time-based prices. The demand reduction approach is the most effective means for reducing ratepayer costs, since power procurement costs are the majority of ratepayer costs, and demand reduction is the only practical way to cut power procurement costs significantly. In fact, McKinsey estimates the savings would have been $2.4 billion to $2.9 billion in 2000.

Rate effects: metering and billing costs are approximately $1.00 per meter per month higher, while peak power savings are estimated to average $8.00 per meter per month. The savings result from not building peaking plants to serve growing peak demand. McKinsey's savings estimates, which are significantly higher, assume that peaking power is purchased out of the spot market. The added $1.00 metering cost would be part of distribution rates – since the meters are part of distribution facilities – while the $8.00 savings would be part of lower generation rates.

Who pays and who benefits: the split of costs and savings depends on the rate design approved by the CPUC. On the cost side, one method is to charge large commercial customers $15 per meter-month, since these customers have the highest usage and will save the most on lower peaking power costs. Another method is equal cents per kWh; this method would increase distribution charges by $0.00075 per kWh, or $0.37 per month for an average residential user. On the savings side, generation charges would be reduced by several times this amount and be calculated based on actual peak power purchase savings.

Need: in combination with Utility Retained Generation, long-term contracts provide the vast majority of California's power needed for the next decade. However, according to the CEC – which says 5,000 MW of peaking is required by 2005 – State Auditor, SDG&E, and others, these sources are not enough to meet California's peaking needs. The State's choices are to build its own peaking plants (via the utilities or otherwise) or to rely on the spot market. The net savings of using the demand reduction alternative are substantial either way.

How it would work: after conducting a competitive bidding process, the utilities would select technology and provide installation plans to the CPUC for approval. The technology would have to meet existing industry and CPUC standards and provide billing quality hourly data delivered daily for every customer. Installation would occur over four years, taking advantage of short-term Federal tax incentives that reduce the cost. Utility union employees would perform all fieldwork. Customers would be offered the same rate choices as today (a flat rate or voluntary time-of-use rates). The CPUC would also develop a peak reduction tariff that could be modeled on 20/20: on critical peak days, any customer who wants can get a 20 percent rebate for cutting usage during peak hours (noon to six p.m.) by 20 percent. Notification would be via newspaper and radio announcements. If needed, the rebate could be much higher, even 50/50. Participants get direct savings, all ratepayers get indirect savings, and non-participants are not penalized in any way.

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or finally selected by a UDC to deploy any advanced metering technology.

RESIDENTIAL CONSUMERS
Documentation of Demand Response Effects of Energy Information and Time-Based Prices

Program	Description	Participation	Reduction in Total Usage	Reduction in Peak Demand
Information Only				
Puget Sound Energy Information Program[i]	Peak and off-peak usage data was provided to all customers on monthly bills and the Internet.	Automatic	4%	Unknown (likely 4%)
Oslo Energi, Norway and Finland[ii]	Customers were given detailed energy usage data, including bar charts and last year's usage, instead of simply total kWh used.	Automatic	10%	Unknown (likely 10%)
Information Combined with Time-Based Price Incentives				
Analysis by McKinsey & Co.[iii]	McKinsey estimated customer response to time-of-use rates using PJM data extrapolated nationwide.	Automatic with opt-out	2.1%	9 to 15%
Puget Sound Energy Time-of-Use Rates[iv]	Peak, mid-peak, and off-peak rates for residential and small commercial customers.	Automatic with opt-out	5%	5%
Pacific Gas & Electric Residential Time-of-Use[v]	Peak and off-peak rates for residential customers; $4.00 monthly meter charge.	Opt-in	0%	21%
DOE Funded Programs and More than 12 Others[vi]	Effects of time-of-use rates based on nationwide data from various programs.	Various	Not stated	20% to 50%
GPU Energy Critical Peak Pricing with Automation[vii]	Peak and off-peak rates with super-peak rates on critical days; remote-controlled thermostat for automatic response to prices.	Opt-in	4.8%	26% to 50%
EPRI and EEI Analysis[viii]	Effects of time-of-use rates based on nationwide data from various programs.	Automatic	8.6%	20%
Willig (Princeton U.) Analysis[ix]	Effects of time-of-use rates based on nationwide data from various programs.	Opt-in	3.7%	7.4%

[i] - The San Jose Mercury on March 11, 2001 reported residential consumers at Puget Sound Energy reduced consumption by four percent when provided time-based usage information on the Internet.
[ii] - Wilhite *et al.*, "Advances in the use of consumption feedback information in energy billing: the experiences of a Norwegian energy utility," 1999 Proceedings, European Council for an Energy Efficient Economy. 1999.
[iii] - "The Benefits of Demand-Side Management and Dynamic Pricing," May 2001.

[iv] - Puget Sound Energy, "Direct Testimony of Penny Gullekson on Behalf of Puget Sound Energy, Inc.," November 26, 2001 and program results through March 2002, provided in meeting April 10, 2002.
[v] - Douglas Caves et al., "Load Shifting Under Voluntary Residential Time-of-Use Rates," Energy Journal, October 1989.
[vi] - S. George *et al.*, "Time to Get Serious About Time-of-Use Rates," Electric Light & Power. February 2002.
[vii] - S. Braithwait, "Residential TOU Price Response in the Presence of Interactive Communication Equipment," Chapter 20 in *Pricing in Competitive Electricity Markets*, edited by A. Faruqui and K. Eakin, Kluwer Academic Publishers, Boston, MA. 2000.
[viii] - A. Faruqui *et al.*, "Impact of Demand-Side Management on Future Customer Electricity Demand: An Update," EPRI Report CU-6953. September 1990.
[ix] - R. Willig, "Effective Deregulation of Residential Electric Service." December 2001.